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electric current is to be supplied. Both of these are to be determined by the deputation upon the motion of the direktion. It will be noted that on the whole the expert administrators of the direktion will have pretty full freedom of action, and that the functions of the deputation are largely supervisory. This is in remarkable contrast with the municipal gas works of the city, in which the direktion is very narrowly controlled, and both oversight and administration are largely in the hands of the deputation. Of course the direktion and deputation of the electric works, like every other branch of the city's administration, are subject to the general control of the magistrat.

As an administrative proposition the whole matter resolves itself into this, that in undertaking the operation of its new property the city of Berlin has decided to entrust an unusual amount of power to an expert organ, and to curtail accordingly the powers of local self-governing organs. Owing to this novel method of control, the financial and technical magnitude of the experiment, and the troublous times in which it is being undertaken, the future experience of Berlin as a producer and seller of electricity should be of unusual interest.

ROBERT C. BROOKS.

SWARTHMORE COLLEGE.

THE EQUIVALENT CONCEPT OF VALUE

It would appear from the controversy on the Concept of Value, between Professors J. M. Clark and B. M. Anderson, Jr.,¹ that there has not yet been reached a complete agreement regarding the use of this word in economics. That the word is colloquially used in a number of heterogeneous senses is no reason why ambiguity in economic discussion should not be eliminated. A single and clear-cut definition is certainly desirable.

¹ In this Journal, August, 1915, pp. 663 seq.

The definition of value that appeals to me more than any other is one given by MacLeod,¹ namely "the value of any economic quantity is any other economic quantity for which it can be exchanged." "Value," accordingly, is the same as "equivalent," and "the value of" should be interpreted as "that which is equal to," or "that which can be obtained in exchange for." Indeed, in mathematics the word is used in this sense. The mathematician finds the "value" of the unknown quantity of an equation, or inserts numerical "values" for the literal terms of a formula. To him "the value of" means "that which can be substituted for."

While under this definition the term "value" would be applicable reciprocally to any two quantities that exchange evenly in the market, the term "price" would be reserved to denote the value of a unit quantity of a good expressed in terms of an adopted value unit.

The above definition of value has been disputed on the ground that value is not a thing, but a property of economic goods that induces men to go to some trouble, or to make some sacrifice, in the effort to obtain the goods. However, this objection does not avail to bar the definition. Nouns that denote attributes of things, such as weight or length, may be applied either in a qualitative or in a quantitative sense. Weight, for example, is a quality of bodies manifesting itself in their tendency to gravitate towards the earth's center; but when we speak of the weight of things, the magnitude of that tendency is meant, and then weight is a concrete quantity, not a quality. So is the term "value" adapted to be used in two senses, according as it denotes either purchasing power, a *quality* of economic goods, or the magnitude of that power, and then value is a *concrete quantity*. In this latter sense only is value a synonym of exchange equivalent, and the equivalent of a *thing* is necessarily another *thing*.

It is also true that the value of a thing may be expressed in as many different ways as there are other things that may be exchanged for it; and it may even happen that the value of a thing under one denomination rises while at the same time its value under another denomination falls.

¹ Elements of Economics, vol. i, p. 223.

This may appear to be in conflict with common sense, but when properly considered, it is by no means unreasonable. Imagine that in a fleet of air craft, at a height at which the aviators have means neither for maintaining nor for measuring their absolute altitude, two of them undertake to observe the altitude of a third. It could then very well happen that one of the observers would report the observed machine as ascending at the same time when the other reports the same machine as descending. Each observation having been made from the standpoint of each of the observers in the absence of a fixed point, only relative positions could be observed. Were it required to keep records of the relative altitudes of all the machines of the fleet, the simplest method would be to select one of the machines as a standard bearer and to record the varying elevation of every other in relation to this one.

The problem of value fluctuation is precisely of the same nature, and the method now current is that of adopting one of the commodities, namely gold, as a standard in terms of which the current prices or exchange rates of the various goods composing the market are expressed.

Since we can learn the prices of goods by no other means than by observing the market, we can become aware of changes only if it is found that consecutive exchanges are made at different rates. The market is the criterion of values, just as a scale is the criterion of weight. There can be no unit of equivalence, and what is called the unit of value is nothing more than an arbitrarily selected quantity of goods, — 23.22 grains of pure gold, called a dollar, — a fraction or multiple of which figures in practically all exchanges as one of the two things the equivalence of which is established through each exchange.

Value, in the sense of "exchange equivalent," could not be conceived if there were but one commodity known to the community. Value could be ascribed to that commodity only if the term were used in the sense of "utility" or "social importance." Between two kinds of goods only one exchange rate or price is conceivable. If there were but ten commodities known and one of them were selected as a standard of

value, the market report could contain a schedule of no more than nine prices; and if a composite unit were chosen, the prices of the ten commodities would be interrelated in such a way that if those of only nine of the commodities were given, that of the tenth — supposing it to be one of those composing the multiple unit — would be a function of the nine prices capable of being computed. The very fact that among ten commodities there can be only nine independent prices is a demonstration that the tenth of the commodities — or a list of commodities containing the tenth one — must serve as a unit of prices and that a unit of absolute value is mathematically precluded, for this would imply the possibility of ten independent prices.

With the adoption of the equivalent definition the task of the theory of value is reduced to an analysis of the factors that regulate exchange rates, and through the contributions of numerous writers, particularly Ricardo, Jevons and Böhm-Bawerk, this problem has been so thoroly elaborated that, at least in my judgment, no phase of the subject remains obscure.¹

The value conception championed by Professor J. M. Clark, namely exchange rate, is virtually identical with the equivalent conception and is perfectly defensible against the objections urged against it by Professor Anderson. Custom has sanctioned the use of the word "rate" in several senses, one of which is "ratio," another "measure." These two concepts are by no means identical. The rate of interest is a "ratio," and as such is an abstract quantity. The number specifying the interest rate remains the same whether the principal be a large or a small sum, or whether the sum be expressed in terms of dollars, pounds, francs or marks. On the other hand, the exchange rate of a commodity is a measure. The number specifying a price varies according as the commodity unit is a ton or a pound, a yard or an inch, and according as the value unit is a cent or a dollar, a penny or a pound. An exchange rate, like an exchange equivalent, is a concrete, not an abstract quantity; it is usually stated, in terms of dollars and cents.

¹ Cf. Bilgram & Levy, *The Cause of Business Depressions*, pp. 26-76.

Professor Anderson uses the term "value" in a different sense. He seeks in "social value" some absolute quality, some essence, residing in commodities independent of exchanges, something that antecedes and motivates exchanges.

The essence inherent in goods that gives rise to exchanges has been analyzed by Jevons, Böhm-Bawerk and others, and by them traced to the faculty of goods to gratify desires, to their utility. But since the utility of a commodity may be greater or less, according as it is being utilized in one way or another, those writers evolved the theory of marginal utility by analyzing the process through which, from among the whole gamut of possible utilities, the one is selected that becomes operative in determining exchange rates. But altho the utility of a good, coupled with its scarcity, motivates exchanges, and marginal utility is a factor in price determination, Professor Anderson holds his conception of social value to be distinct from marginal utility.

He explains that appreciation of utility is purely subjective, which precludes comparison where a plurality of persons is involved. To be sure, one person can compare his comforts with his discomforts; it is for him to determine what sacrifice to make in order to gain a certain desideratum. But how can marginal utility govern price in the case of an exchange between two or more persons? How can it attain social significance?

The answer is simple enough. Two kinds of goods figure in every exchange, and each party to an exchange compares the loss of that which he gives with the gain of that which he receives. Each participant agrees to an exchange if *in his estimation* the utility of that which he receives more than covers the loss of that which he gives. The personal equation as regards subjective estimation of utility or effort does not enter into the problem. Subjective comparison of utility and effort, of gain and loss, becomes materialized through each individual comparing two objects. And this is true not only where the exchange takes the form of barter, but also in the highly developed markets where purchase and sale take the place of barter. The gain represented by the receipt of a

dollar is then appreciated by the utility of the most desirable things the dollar will buy, and the loss represented by paying a dollar is measured by the effort required to earn one.

But this seems to lead to another difficulty. An appreciation of the utility of a dollar is here supposed to depend upon its purchasing power. And moreover, the measure of marginal utility can be found only by a process of pairing off, through exchanges, the buyers whose desire for the goods under consideration exceeds their price against the sellers whose reluctance to produce and sell is more than covered by it. This would predicate that the prices of things in general are known. And if so, the problem of prices would seem to require no further solution. The attempt to find prices through the law of marginal utility would indeed appear to be a clear case of reasoning in a circle.

Is this really so? We know that in the market prices frequently change, adapting themselves to changing conditions. If once adjusted, they tend to remain stable until one or another cause arises calling for further readjustment. But the ramifications of the forces that operate in the market are such, and the processes of the market are so replete with reactions, that prices adapt themselves very gradually to changing conditions. Now, the law of value cannot be more than a reflection of the processes of the market. It cannot do more than point out the conditions under which the current price of a given commodity tends to remain stationary, by showing that if those conditions do not obtain, certain forces come into play to readjust the price. It is therefore logically admissible to assume current prices as known, the subject to such readjustments as are pointed out by the law. I fail to see that in the analysis of the causes that govern exchange rates, in the analysis so lucidly illustrated by the so-called supply and demand curves,¹ any premises are resorted to which are not logically assumable.

¹ The ordinates of these curves do not measure "numbers of dollars," or quantity of the value denominator, as Professor Anderson seems to think; but the varying estimations of the utility of the goods in question in terms of dollars or whatever the unit may be. And a fixed value of the dollar is not assumed. That both buyers and sellers accord varying appreciation to the means of payment as well as to the object of purchase and sale has been duly taken into account in *The Cause of Business Depressions*, pp. 48-56.

The value concept based on exchange equivalence in conjunction with the study of the interrelation of utility and effort, involving the subjective comparison of desire to consume with reluctance to produce, so completely supplies all that can be expected of a theory of value that there seems to be no need for introducing the concept of absolute value.

HUGO BILGRAM.

PHILADELPHIA, PA.